CLAIMS

1. A linearly expandable router (100), comprising:

a first routing engine (128) having input and output sides;

a second routing engine (128) having input and output sides;

a third routing engine (128) having input and output sides;

a first link (110), said first link (110) coupling said input side of said first routing engine (128) to said input side of said second routing engine (128);

a second link (112), said second link (112) coupling said input side of said first routing engine (128) to said input side of said third routing engine (128); and

a third link (116), said third link (116) coupling said input side of said second routing engine (128) to said input side of said third routing engine (128);

wherein said first, second and third routing engines (128) are arranged in a fully connected topology.

2. The apparatus of claim 1, wherein:

said first, second and third routing engines (128) each have N inputs to said input side thereof and M outputs from said output side thereof; and

said linearly expandable router (100) formed from said first, second and third routing engines (128) having 3N inputs and 3M outputs.

3. The apparatus of claim 2, wherein:

said first link (110) providing said N inputs to said first routing engine (128) to said input side of said second routing engine (128) as a first N additional inputs thereto and providing said N inputs to said second routing engine (128) to said input side of said first routing engine (128) as a first N additional inputs thereto;

said second link (112) providing said N inputs to said first routing engine (128) to said input side of said third routing engine (128) as a first N additional inputs thereto and providing said N inputs to said third routing engine (128) to said input side of said first routing engine (128) as a second N additional inputs thereto; and

said third link (116) providing said N inputs to said second routing engine (128) to said input side of said third routing engine (128) as a second N additional

inputs thereto and providing said N inputs to said third routing engine (128) to said input side of said second routing engine (128) as a second N additional inputs thereto.

4. The apparatus of claim 1, and further comprising:

a fourth routing engine (128) having input and output sides;

a fourth link (114), said fourth link (114) coupling said input side of said first routing engine (128) to said input side of said fourth routing engine (128);

a fifth link (118), said fifth link (118) coupling said input side of said second routing engine (128) to said input side of said fourth routing engine (128); and

a sixth link (120), said sixth link (120) coupling said input side of said third routing engine (128) to said input side of said fourth routing engine (128);

wherein said first, second, third and fourth routing engines (128) are arranged in a fully connected topology.

5. The apparatus of claim 4, wherein:

said first, second, third and fourth routing engines (128) have N inputs to said input side and m outputs from said output side; and

said linearly expandable router (100) formed from said first, second, third and fourth routing engines (128) having 4N inputs and 4M outputs.

6. The apparatus of claim 5, wherein:

said first link (110) providing said N inputs to said first routing engine (128) to said input side of said second routing engine (128) as a first N additional inputs thereto and providing said N inputs to said second routing engine (128) to said input side of said first routing engine (128) as a first N additional inputs thereto;

said second link (112) providing said N inputs to said first routing engine (128) to said input side of said third routing engine (128) as a first N additional inputs thereto and providing said N inputs to said third routing engine (128) to said input side of said first routing engine (128) as a second N additional inputs thereto;

said third link (114) providing said N inputs to said first routing engine (128) to said input side of said fourth routing engine (128) as a first N additional

inputs thereto and providing said N inputs to said fourth routing engine (128) to said input side of said first routing engine (128) as a third N additional inputs thereto;

said fourth link (116) proving said N inputs to said second routing engine (128) to said input side of said third routing engine (128) as a second N additional inputs thereto and providing said N inputs to said third routing engine (128) to said input side of said second routing engine (128) as a second N additional inputs thereto;

said fifth link (118) proving said N inputs to said second routing engine (128) to said input side of said fourth routing engine (128) as a second N additional inputs thereto and providing said N inputs to said fourth routing engine (128) to said input side of said second routing engine (128) as a third N additional inputs thereto;

said sixth link (120) proving said N inputs to said third routing engine (128) to said input side of said fourth routing engine (128) as a third N additional inputs thereto and providing said N inputs to said fourth routing engine (128) to said input side of said third routing engine (128) as a third N additional inputs thereto.

7. A linearly expandable broadcast router (100), comprising:

at least three broadcast router components (102, 104, 106), each of said at least three broadcast router components (102, 104, 106) having an input side and an output side; and

means (110, 112, 116) for coupling said at least three linear expandable broadcast router components (102, 104, 106) in a fully interconnected topology.

8. The apparatus of claim 7, wherein said input side of each of said at least three broadcast router components (102, 104, 106) has N inputs and said output side of each of said at least three broadcast router components (102, 104, 106) has M outputs.

9. The apparatus of claim 8, wherein:

each one of said at least three broadcast router components (102, 104, 106) further comprises a routing engine (128) coupled between said input and output sides thereof; and

said coupling means (110, 112, 116) further comprises means for coupling (130, 132 130) said N inputs for each one of said at least three broadcast router components (102, 104, 106) to said routing engine (128) for the other ones of said at least three broadcast router components.

10. A method of constructing a linearly expandable broadcast router (100), comprising:

providing first, second and third routers (102, 104, 106), each having input and output sides;

coupling, using a first discrete path (110), said input side of said first router (102) to said input side of said second router (104);

coupling, using a second discrete path (112), said input side of said first router (102) to said input side of said third router (106); and

coupling, using a third discrete path (116), said input side of said second router (104) to said input side of said third router (106).

11. The method of claim 10, and further comprising:

providing a fourth router (108) having input and output sides;

coupling, using a fourth discrete path (114), said input side of said first router (102) to said input side of said fourth router (108);

coupling, using a fifth discrete path (118), said input side of said second router (104) to said input side of said fourth router (108); and

coupling, using a sixth discrete path (120), said input side of said third router (106) to said input side of said fourth router (108).